

Status of radiotherapy in a multidisciplinary cancer board

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Multidisciplinary cancer boards (CBs) for making cancer treatment decisions have become popular in many countries; however, the status of radiotherapy in CBs and the influence of CBs on radiotherapy decisions have not been studied. To clarify these issues, we reviewed the minutes of our CBs from February 2010 to March 2012, and we classified planned treatments discussed at the CBs into five categories and analyzed decisions concerning radiotherapy in each category. The fraction of cases for which radiotherapy was recommended was 536/757 (71%). These cases included 478 cases (63%) for which radiation therapy was planned and four cases (0.5%) for which radiation therapy was unexpectedly recommended. On the other hand, radiation therapy was canceled in 21 cases (4%) for which radiation therapy had been planned. This study showed that radiotherapy was discussed in many cases at CBs and that CBs have a great influence on decisions concerning radiotherapy.

Keywords: radiotherapy; cancer board; multidisciplinary approach; treatment decision

INTRODUCTION

Medical practice has recently become specialized, and a multidisciplinary approach is being used to diagnose and to make treatment decisions for various kinds of cancer. Cancer boards (CBs) are conferences in which various specialists, including physicians, surgeons, medical oncologists, radiation oncologists, radiologists, pathologists and palliative care specialists, meet to discuss diagnosis and treatment. They have become popular in western countries [1].

We started a multidisciplinary CB in Yamagata University Hospital in September 2008, and we investigated how CBs influenced treatment decisions in our previous study. Of 475 patients for whom results of discussions were examined, minor changes in treatment methods were made for 42 patients (9%) and major changes were made for 28 patients (6%), indicating that CBs have a great influence on cancer treatment decisions [2]. However, there has been no study in which effects of CBs on radiotherapy decisions were examined, though there have been some studies on the benefits of CBs as stated previously [3–13]. In this study, we clarified

the status of radiotherapy in CBs and the influence of CBs on radiotherapy decisions by analyzing cases discussed at CBs.

MATERIALS AND METHODS

Yamagata University Hospital is one of the regional designated cancer hospitals, and approximately 1200 new cancer patients are treated at the hospital every year.

In our hospital, CBs are held every Tuesday and biweekly on Wednesdays, and we discuss each of the 13 types of boards. The timetable for the boards is shown in Table 1. In our CBs, cases are presented after a full diagnostic procedure, and the discussion is focused on the best treatment for each case. Physicians, nurses, pharmacists and medical students attend the CB. To promote a multidisciplinary approach, at least one medical oncologist and one radiation oncologist (usually two or more) have participated in the CBs. A palliative care specialist has also participated in most of the CBs. Physicians or surgeons do case presentations. Minutes of the cases discussed have been recorded since February 2010,

Table 1. Monthly timetable of cancer boards in Yamagata University Hospital

		17:00	17:30	18:00	18:30	19:00
1st week	Tuesday	Lung	Bone/Soft tissue	Gastrointestinal/Hepatobiliary	Brain	
1st week	Wednesday	Hematology/Pediatric	Head and neck	Other		
2nd week	Tuesday	Lung	Gynecology	Gastrointestinal/Hepatobiliary	Urology	
3rd week	Tuesday	Lung	Bone/Soft tissue	Gastrointestinal/Hepatobiliary	Brain	Breast
3rd week	Wednesday	Hematology/Pediatric	Head and neck	Other		
4th week	Tuesday	Lung	Gynecology	Gastrointestinal/Hepatobiliary	Urology	

Table 2. Classification of planned treatment

A	no treatment plan
B1	a single treatment plan including radiotherapy (e.g. chemoradiotherapy, radiotherapy alone)
B2	a single treatment plan not including radiotherapy (e.g. chemotherapy, surgery)
C1	several treatment plans including radiotherapy
C2	several treatment plans not including radiotherapy

and the minutes were used in this study. We analyzed the number of cases discussed by each board and classified cases into five categories according to status of planned treatment. Category A cases are cases presented at CBs without a treatment plan. Category B1 cases are cases presented at CBs with a treatment plan including radiotherapy (e.g. radiotherapy alone, chemoradiotherapy). Category B2 cases are cases presented at CBs with a treatment plan not including radiotherapy (e.g. surgery, chemotherapy, best supportive care). Category C1 cases are cases presented at CBs with several treatment plans including radiotherapy (e.g. surgery or chemoradiotherapy or best supportive care). Category C2 cases are cases presented at CBs with several treatment plans not including radiotherapy (e.g. surgery or chemotherapy or best supportive care). The classification of categories is shown in Table 2. We analyzed each case for whether radiotherapy was recommended.

RESULTS

From February 2010 to March 2012, a total of 757 cases were discussed at CBs, and 576 patients were recommended for radiotherapy. In the same period, 1152 cancer patients received radiotherapy in our hospital. Radiotherapy based on recommendations of CBs was therefore performed in approximately 30% of the patients.

The number of cases discussed by each board is shown in Table 3. The largest number of cases was discussed by the hematology board, followed by the urology board, the lung board, and the brain board. Breast cancer and hepatobiliary cancer are not rare in our hospital, but the number of cases discussed at CBs was very small. Among the scheduled

treatments, B1 was the most frequent (469/757, 62%). The number of patients in each planned treatment classification is shown in Table 4. Radiation therapy was recommended in half of the Category A cases. Of 469 Category B1 cases for which radiation therapy was planned, radiation therapy was canceled in eight cases (2%). Of 148 Category B2 cases for which radiation therapy was not planned, radiation therapy was recommended unexpectedly in two cases (1%). Of 30 Category C1 cases for which radiation therapy was one of the treatment options, radiation therapy was not selected as a recommended treatment in 13 cases (43%). Of nine category C2 cases for which radiation therapy was not included as a treatment option, radiation therapy was recommended in two cases (22%). As a result, of 54 Category A cases for which radiation therapy was planned, 46 cases received radiotherapy; of two Category B2 cases for which radiation therapy was recommended unexpectedly, one case received radiotherapy, and two Category C2 cases for which radiotherapy was recommended both received radiotherapy.

DISCUSSION

This study showed that radiation therapy was discussed in many cases by CBs, and it is noteworthy that there were unexpected changes in radiation therapy plans. Of 469 Category B1 cases for which radiation therapy was planned, radiation therapy was canceled in eight cases (2%). Of these eight cases, chemotherapy was recommended in three cases, close follow-up was recommended in four cases, and surgery was recommended in one case instead of radiation therapy. Of 148 Category B2 cases for which radiation therapy was not planned, radiation therapy was recommended

Table 3. Number of patients discussed in each board (2010–2012)

	A	B1	B2	C1	C2	Total
Brain	5 (16%)	76 (90%)	3 (4%)	0	0	84 (100%)
Head and neck	8 (11%)	51 (70%)	6 (8%)	6 (8%)	2 (3%)	73 (100%)
Lung	16 (13%)	68 (55%)	30 (24%)	8 (6%)	2 (2%)	124 (100%)
Breast	2 (29%)	4 (57%)	1 (14%)	0	0	7 (100%)
Gastrointestinal	21 (28%)	31 (42%)	13 (18%)	6 (8%)	3 (4%)	74 (100%)
Hepatobiliary	3 (16%)	13 (68%)	2 (11%)	0	1 (5%)	19 (100%)
Urology	10 (8%)	104 (83%)	11 (9%)	1 (1%)	0	126 (100%)
Gynecology	15 (31%)	25 (52%)	6 (13%)	2 (4%)	0	48 (100%)
Bone and soft tissue	9 (26%)	20 (59%)	3 (9%)	2 (6%)	0	34 (100%)
Pediatric	0	9 (69%)	2 (15%)	2 (15%)	0	13 (100%)
Ophthalmology	3 (43%)	3 (43%)	1 (14%)	0	0	7 (100%)
Dermatology	1 (33%)	1 (33%)	1 (33%)	0	0	3 (100%)
Hematology	8 (6%)	64 (44%)	69 (48%)	2 (1%)	1 (1%)	144 (100%)
Other	0	0	0	1 (100%)	0	1 (100%)
Total	101 (13%)	469 (62%)	148 (20%)	30 (4%)	9 (1%)	757 (100%)

Table 4. Number of patients in each planned treatment classification

	RT recommended	RT not recommended
A (101)	54 (53%)	47 (47%)
B1 (469)	461 (98%)	8 (2%) ^b
B2 (148)	2 (1%) ^a	146 (99%)
C1 (30)	17 (57%)	13 (43%) ^c
C2 (9)	2 (22%) ^a	7 (78%)
Total (757)	536 (71%)	221 (29%)

^aRadiation therapy was recommended unexpectedly for cases in which radiation therapy had not been planned. ^bRadiation therapy was canceled for cases in which radiation therapy had been planned. ^cRadiation therapy was not selected as a recommended treatment for cases in which radiation therapy was one of the treatment options.

unexpectedly in two cases (1%). Both cases were small-cell lung cancer cases. At first, physicians had judged that use of chest radiotherapy would be difficult for the two cases, but through CB discussion, radiation therapy was recommended for both cases. As a result, one case received radiotherapy, but the other case did not receive radiotherapy because bone metastasis was found by bone scintigraphy after the CB discussion. Of nine Category C2 cases for which radiotherapy was not scheduled, radiation therapy was recommended in two cases (22%). One case was a case of double cancer (esophageal cancer and buccal mucosa cancer). In that case, the first treatment option was surgery and chemotherapy, but

radiation oncologists proposed that chemoradiotherapy was a better treatment option and the proposal was chosen as the preferred treatment option of the board. The other case was a case of esophageal cancer. The first treatment option was surgery or neoadjuvant chemotherapy, but radiation oncologists proposed concomitant chemoradiotherapy, and this treatment was chosen as the recommended treatment option. As a result, these cases received chemoradiotherapy.

CBs provide a recommendation for the best treatment option but not the final decision. The final treatment decision is made by the patient. However, a recommendation made by many experts would surely be an improvement on that made by only one expert, because cases in our CBs are discussed by various specialists.

There have been several reports on the frequency of changes in treatment methods at CBs. Wheless *et al.* reported that treatment change was recommended in cases of malignancy for 24% of the patients and that a large percentage of cases discussed in the head and neck board received more intensive therapy [3]. Kurpad *et al.* reported that 38% of patients had a change in diagnosis or treatment following discussions between their urologic board [4]. Sarff *et al.* reported that 42% of the board members in their study indicated that CB information would change their practice [5].

We did not investigate treatment changes at each board. Total treatment changes in radiotherapy were fewer than those reported in past studies, but cases presented at CBs without a treatment plan were recommended for radiotherapy at a high frequency. It is obvious that radiation oncologists play an important role in making CB decisions.

We consider that all cancer cases that are to receive treatment should be discussed at CBs, however, cases for which standard treatment can be applied could be excluded from cases to be discussed at CBs because of limitations of time and manpower.

Before we started CBs, we could not intervene in treatment decisions and we could not discuss an indication for radiation therapy without consultation from physicians or surgeons. Jagsi *et al.* reported that radiation oncologists believe that they should intervene early in the process of a treatment decision, but the frequency of consultation of surgeons to radiation oncologists is very low in breast cancer patients [14]. It is obvious that therapeutic recommendations differ depending on the specialty. Fowler *et al.* studied differences in treatment recommendations by urologists and radiation oncologists for prostate cancer. For patients with moderately differentiated, clinically localized cancers and more than 10-year life expectancy, 93% of the urologists chose radical prostatectomy as the preferred treatment option, while 72% of the radiation oncologists considered surgery and external beam radiotherapy to be equivalent treatments [15]. We have considered intervention by radiation oncologists early in the treatment decision process to be important because we have experienced many patients who missed the timing of radical radiotherapy because of delay in consultation. We expect that CBs may be able to solve this problem.

A shortage of medical and radiation oncologists is a great problem in Japan, and there are many hospitals, including designated cancer hospitals, without oncologists. A national structure survey of radiation oncology in 2009 revealed that about 700 hospitals had linear accelerators, but the workforce of radiation oncologists was approximately 900 full-time equivalents (FTEs). Because of this shortage in the workforce, radiation oncologists are very busy and it is sometimes difficult to attend many kinds of CBs. In such hospitals, hiring part-time oncologists for the CB may be useful. In fact, in our area, attendance by part-time oncologists at CBs in hospitals without full-time oncologists is becoming common.

It is obvious that CBs have a significant influence on the usage of radiation therapy, but the main goal of CBs is to improve treatment outcomes such as survival and quality of life. The effects of CBs on treatment outcomes have been investigated in a few recent studies. Dillman and Chico reported that there were increases in 5-year survival rate from 16% to 19% and of median survival period from 11 months to 13 months after weekly multidisciplinary conferences [12]. Forrest *et al.* reported that the median survival period improved by 3.2 months (from 3.4 to 6.6 months) after the introduction of a multidisciplinary team [13]. Possible reasons for this improvement were that the multidisciplinary approach improved diagnosis, decreased the use of only palliative care and increased the use of intensive therapy. We have not investigated the effects of CBs on treatment

outcomes, but the effects of CBs on survival and QOL should be studied in the future.

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